



Explanation of Nozzles

A White Paper from Assmann

Polyethylene tanks come with a variety of nozzles. Often the nozzles are misapplied and can cause problems shortly after installation. The following is a general guideline to help select the proper nozzles for the job. Typically, there are four styles of nozzles that can be selected- Bulkhead, Flange, Metallic, and Molded In.

Bulkhead (FNPT): Bulkhead fittings are a compression style fitting that has an insert through the tank wall with a gasket on the interior of the tank. A threaded nut is placed on the exterior of the tank and the force applied to the exterior nut will tighten the body snug against the tanks wall. This style nozzle is the most common type installed on polyethylene tanks. The benefits of this type of nozzle are that these are typically the least expensive nozzles available while also eliminating the cross section exposure of the plastic. Assmann recommends that bulkhead style nozzles are used on tanks smaller than 3000 gallons or on the roof of the tank when they are not under high hydrostatic load.

Flange (FNPT): Flange fittings are an external sealing connection. There are typically four to eight rubber encapsulated bolts on the interior of the tank. A gasket is placed on the exterior of the tank and the flange is tightened by the bolts to seal the gasket against the tank wall. The flange style fitting provides an excellent seal on large thick walled tanks. Incoming pipe work cannot be over tightened and cause the gasket to slip or leak. Assmann recommends flange fittings be used on tanks larger than 3100 gallons. However, these nozzles should not be utilized in harsh chemical applications, as the nozzle exposes a cross section of plastic allowing chemical to pass through the tank wall which could cause premature tank failure.

Metallic (FNPT) (NPT) (NPT X NPT): Metallic fittings are internal sealing connections similar to a bulkhead style connection. Typically the metallic fitting has four to eight bolts welded into an internal backing plate. Also welded into the internal backing plate is a female coupler, male nipple or full male nipple. The internal plate allows the coupler or nipple to pass through the tank wall, eliminating any cross section exposure of plastic. On the exterior of the tank there is a metallic plate compressing the assembly to the tank wall. This style of fitting will not loosen or slip when incoming piping is connected. Assmann offers this style of nozzle in 316 Stainless Steel, Titanium or Hastelloy C-276 construction which will make the metals compatible with almost any chemical. One of the major benefits of this nozzle is that there is no cross section of plastic exposed to harsh chemicals. The nozzle will never loosen or slip during piping and there are a variety of configurations that can be provided depending upon the chemical application.

Molded In (Flanged): Molded in fittings are ideal for applications where a full drain connection is required and where the application cannot accept a conical bottom tank. Assmann's molded in nozzle fitting has an encapsulated metallic insert that is constructed of 316 Stainless, Titanium or Hastelloy. This nozzle is supplied with a companion flange constructed of Crosslink polyethylene with an encapsulated metallic insert. With this nozzle an elevation pad is required, as the flange connection extends below the tank's base. The benefits to this nozzle are that you can achieve full drain without expensive conical stands. The tank can be cleaned without entering the vessel, and solids and sediment are pulled off the tank bottom every time that suction is applied.

